

# Apple- Forum

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Support for AppleWorks and ///EZ Pieces Users

## Member Finds Source of TransWarp GS TTL Oscillators

Dear Cathleen,

My thanks to John Link for figuring out how to accelerate the TransWarp GS card and to NAUG for publishing those articles.

Digi-Key Corporation, a mail order electronics supplier, sells the 1/2-TTL oscillators required to accelerate the TransWarp GS. Speed and part numbers are as follows:

Speed	Digi-Key Part No.	Epson Part No.
32 MHz	SE1101	SG-531H32.0000
33.3333	SE1102	SG-531H33.3333
36.0000	SE1103	SG-531H36.0000
40.0000	SE1104	SG-531H40.0000
42.0000	SE1105	SG-531H42.0000
46.0000	SE1106	SG-531H46.0000

The oscillators cost \$3.75 plus \$5 s/h. Foreign orders are \$5 additional.

Raymond Negstad  
Newark, Delaware

[Ed: Digi-Key Corporation, Box 677, Thief River Falls, Minnesota 56701-0677; (800) 344-4539; Fax: (218) 681-3380.]

## Problems Transferring Files

Dear NAUG:

I need help transferring my AppleWorks 3.0 word processor files to MacWrite II on a Macintosh. I followed the directions in the October 1990 *AppleWorks Forum*, but my AppleWorks files don't appear when I select "Open" from the MacWrite File Menu. In addition, I can't save MacWrite II files in AppleWorks format because "AppleWorks" does not appear on the "Save As" option under the File Menu. What am I doing wrong?

Pam Reider  
Butler, Pennsylvania

[Ed: It sounds as if you did not copy the AppleWorks translator file onto your Macintosh.

MacWrite II comes on three disks; the translators are on the Reference Disk in a folder called "Claris Translators". Copy that folder into your System Folder. If you need to save space, you can delete any translators you won't be using. This should let you transfer your AppleWorks data.]

## Member Thanks a Disk Rescuer

Dear NAUG:

My thanks to NAUG for publishing a list of disk rescuers and to Jim Hirsch, one of the volunteers on that list. Jim recently recovered all the data on a damaged disk that contained my entire curriculum. I want you to know how much NAUG's volunteers contribute to the mental health and vitality of the AppleWorks community.

Debbie Slade  
Cambridge, Massachusetts

## AppleWorks Forum

Editor: Cathleen Merritt  
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The **National AppleWorks Users Group (NAUG)** is an association that supports AppleWorks users. NAUG provides technical support and information about AppleWorks and enhancements to that program. Our primary means of communicating with members is through the monthly newsletter entitled the **AppleWorks Forum**.

# How to Do Date Arithmetic in AppleWorks

by Andreas Wennborg

*This article describes how to create a spreadsheet that determines the number of days between any two dates. The author assumes that you know how to create and manipulate a spreadsheet template.*

One of the features missing from AppleWorks' spreadsheet module is a function that automatically calculates the difference between two dates. This is an important omission; book-keeping applications such as accounts receivable and payable, aging reports, and many other applications assume the ability to determine the number of days between two dates.

This article describes how to use the AppleWorks spreadsheet to determine the number of days between any two events. All dates must be expressed in dates of the Gregorian calendar; the calendar in use throughout the world today (see the sidebar entitled “What is the Gregorian Calendar”).

I will describe how to create a small spreadsheet that does the calculations; you can then use these formulas in your own spreadsheet templates. The spreadsheet also computes the day of the week for both dates.

## Some Background

The mathematics for this template comes from a BASIC program my father wrote on a 1K Sinclair ZX80 ten years ago. Through the years I polished and optimized the routines. The results of this work appear in *Figure 1*.

**Figure 1: BASIC Program that Counts Days**

This BASIC program computes the number of days since year zero in the Gregorian calendar:


```

5 REM Y=YEAR, M=MONTH, D=DAY, R=RESULT
10 R = 365 * Y + 31 * (M - 1) + D
20 IF M >= 3 THEN R = R - INT (.4 * M + 2.3)
30 IF M < 3 THEN Y = Y - 1
40 R = R + INT (Y / 4) - INT (.75 + INT (Y / 100) * .75)

```

**Figure 2: Spreadsheet that Counts Days**

```

File: CountDays                                REVIEW/ADD/CHANGE                                Escape: Main Menu
=====A=====B=====C=====D=====E=FGHIJK=====L=====M=====N=====O=====P=====Q=====
1|
2|Count the number of days between two dates
3|-----
4|          YYYY MM DD
5|1st date 1990  8 11 #####    Saturday
6|2nd date 1990  8 18 #####    Saturday
7|
8|Days between 1st & 2nd          7
9|
10|
11|
12|
13|
14|
15|
16|
17|
18|
-----
A1
Type entry or use  commands                                948K Avail.

```

The procedure works by counting the number of days since the year 0 for each date. Of course, the existence of leap years and other variables add interesting complexities to this problem.

## Figure 3: Label Entries in the Template

```
File: CountDays                                REVIEW/ADD/CHANGE                                Escape: Main Menu
=====A=====B=====C=====D=====E=====F=====G=====H=====I=====J=====K=====L=====M=====N=====O=====P=====
1|
2|Count the number of days between two dates
3|-----
4|          YYYY MM DD
5|1st date                                day
6|2nd date                                day
7|
8|Days between 1st & 2nd
9|
10|
11|
12|
13|
14|
```

## Figure 4: Sample Data

```
File: CountDays          REVIEW/ADD/CHANGE          Escape: Main Menu
=====A=====B=====C=====D=====E=====F=====G=====H=====I=====J=====K=====
1|
2|Count the number of days between two dates
3|-----
4|          YYYY MM DD
5|1st date 1960 12 22 ##### Thursday
6|2nd date 20 0 12 31 ##### Sunday
7|
8|Days between 1st & 2nd          14619
9|
10|
11|
12|
13|
14|
```

### Step-By-Step

Follow these steps to create the spreadsheet in *Figure 2* that determines the number of days between two dates:

1. Create a new spreadsheet called CountDays.
2. Issue an Apple-L command and make columns B and C two characters wide, columns D and E three characters wide, and columns F through K one character wide.
3. Enter the labels that appear in *Figure 3*.
4. Now enter the following formulas:
  - A. Cell G5:  $+B5*100+C5*365+(31*(D5-1))+E5$ . This formula calculates the number of days since year 0.
  - B. Cell H5:  $@IF(D5>=3,G5-@INT(.4*D5+2.3),G5)$ . This formula adjusts the number of days if

the month is not January or February.

- C. Cell I5:  $@IF(D5<3,B5*100+C5-1,B5*100+C5)$ . This formula adjusts the number of days if the month is January or February.
- D. Cell J5:  $+H5+@INT(I5/4)-@INT(.75+(@INT(I5/100)*.75))$ . This is a final adjustment that makes a correction you need every fourth century.

5. The following formulas display the day of the week next to each date entry. These procedures only work with AppleWorks 3.0; omit these steps if you use an earlier version of AppleWorks:

- A. Cell K5:  $@IF(J5-(@INT(J5/7)*7)=0,7,J5-(@INT(J5/7)*7))$ . This formula determines the numeric value of the day of the week; i.e., Sunday equals 1, Monday equals 2, and so forth. Set the value format for this cell to Fixed format, 2 decimal places.

- B. Cell L5:  $@CHOOSE(K5,"Sun","Mon","Tues","Wednes","Thurs","Fri","Satur")$ . This formula prints the beginning of the name of each day of the week. (Remember that you entered "day" as a label in the adjacent cell.).

6. Now use AppleWorks' Copy Command and copy cells G5, H5, I5, J5, K5, and L5 to the corresponding cells in row six. All cell references are relative.
7. Enter the formula  $+J6-J5$  into cell L8.

### Check Your Work

Check your work by entering the dates in *Figure 4* and compare your results to the figure. Note that you enter the century as two digits in cells B5 and B6. You enter the year as two digits into cells C5 and C6. Change the label format of cell L5 and L6 to right justify the entries. Then save your work.

### What is the Gregorian Calendar?

The Gregorian calendar was adopted by most countries in the 18th and 19th centuries, and is the calendar we use today. (The Soviet Union and Turkey adopted the Gregorian calendar in 1917 and 1927 respectively.)

Before Julius Caesar there was great confusion in the number of days in a month and in a year. Caesar introduced a new calendar that contained twelve months and decreed that each year contained 365.25 days. Thus, the calendar year was set to 365 days with a leap day every fourth February. (Initially there was a leap year every third year instead of every fourth year; Emperor Augustus corrected this error in 8 A.D.) The months of Quintilis and Sextilis were later changed to Julius and Augustus to honor Caesar and Augustus.

Unfortunately, the Julian calendar was not perfect, and in the 16th century scientists became unhappy with the fact that the vernal equinox came slightly later each calendar year. A commission appointed by Pope Gregorius XIII in 1572 resolved this problem by setting the date of the vernal equinox to March 21 and by setting the year's length to 365.2425 days. The commission also decreased the number of leap years by declaring that years ending in 00 are only leap years if the first two digits can be evenly divided by four. Thus, the year 1900 was not a leap year but the year 2000 will be. As a result, the Gregorian calendar has three fewer days than the Julian calendar every 400 years.

Date formats vary from country to country, and I used the ISO standard: YYYY MM DD. Of course, you can rearrange this data by rearranging the columns with AppleWorks' Apple-M command. ■

*[Andreas Wennborg is a entrepreneur in Göteborg, Sweden. The author appreciates the help of Paul Mitlid who translated this article into English.]*

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## Late News and Special Offers

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A2-Central will host the third annual Apple II Developers Conference from July 16-21. This year's conference, which will be held in Kansas City, Missouri, includes Developer Colleges on July 16 and 17, the Developers Conference on July 18 and 19, and the Apple Central Expo on July 20 and 21. The Developer Colleges and Developers Conference includes more than 25 sessions of interest to Apple II software and hardware developers. The Apple Central Expo is of interest to all Apple II users.

For more information about the Developer Colleges and Developers Conference, contact Resource Central at (913) 469-6502. For information about the Apple Central Expo, contact Events Specialists at (800) 955-6630.

### FrankSoft Publishing

FrankSoft Publishing recently announced the release of version 2.1.1 of Your Net Worth, the company's AppleWorks template that prepares a net worth statement accepted by most banks, brokerage houses, and other financial institutions. A complete description of Your Net Worth appears in the January 1991 issue of the *AppleWorks Forum*.

Version 2.1.1 accepts more than twice as many entries as earlier versions of the template and includes dividend handling and improved error checking routines.

Your Net Worth 2.1.1 is compatible with AppleWorks 1.3 or later and any Apple II computer that provides at least a 66K AppleWorks desktop.

Your Net Worth 2.1.1 lists for \$39.95. However, until August 1, NAUG members can purchase Your Net Worth for \$21.50 (plus \$3 s/h) directly from the publisher. Owners of earlier versions can upgrade for \$8 postpaid.

*[FrankSoft Publishing, 3300 33rd Avenue Court, Rock Island, Illinois 61201; (309) 788-7663; Fax: (309) 788-7664.]* ■



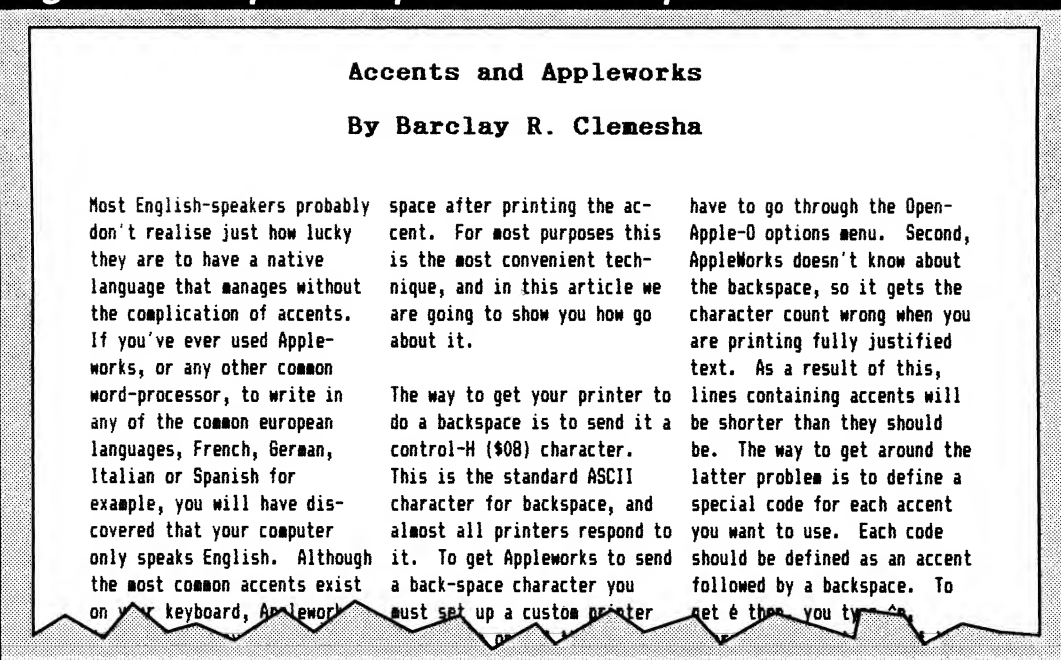
# Multiple Column Output Made Easy

by Barclay Clemesha

The powerful clipboard in AppleWorks 3.0 lets you transfer data between all three of the program's modules. That makes it easy to use one module to enhance the capabilities of any other module.

In this article, I will describe how to use this flexibility to print multiple column documents. *Figure 1* presents an example of multiple column output from AppleWorks.

**Figure 1: Sample Multiple Column Output**



Follow these steps to create multiple column documents with AppleWorks (save your work regularly throughout this process):

1. Prepare the text for the document in the word processor. Complete your writing before continuing; you will not be able to edit the document after you start the formatting process.
2. Set the characters per inch to the size you will use in the final document, but do not include boldface or underline commands; you will add those later.
3. Set the right margin so the column width is the width you want for each column in the final multi-column printout. A two-column document should be about three inches wide. That will leave room for a 1/2-inch margin between columns and 1-inch left and right margins on an 8.5-inch wide page.

To get a three-inch wide document, you set the right margin to four inches. Calculate the size of the right margin as follows:

The calculations for our example are as follows:

<u>Formula</u>	<u>Our example</u>
Platen width setting	= 8.0 inches
- Width of column	= 3.0 inches
- Width of left margin	= 1.0 inches
Right margin setting	= 4.0 inches

4. Issue an Apple-1 to put the cursor at the beginning of the document, then issue an Apple-C and copy the entire document to the clipboard.
5. Create a new spreadsheet called "TWO COLUMN" and copy the document from the clipboard. The text will flow into column A but will be truncated on the screen.
6. Put the cursor in column B and use the Apple-L command to widen columns A and B simulta-

## Word Processor Tips...

neously. Make certain the display in column A no longer truncates characters. Then press the Return Key. (You will see why you put the cursor in column B when you try this procedure.)

7. Issue another Apple-L and widen column A to add space between columns. For example, if you will print at 17 characters per inch and want a 1/2-inch space between columns, add eight extra characters to the width of column A.

Now you will determine the length of the first column of text and will move the remaining text into column B. Continue as follows:

8. Issue an Apple-9 and determine the number of rows in the document. Divide that number by the number of columns to determine the number of rows you want in each column. If the result contains a decimal remainder, round *up* to the nearest whole number. (You want column A to be longer than column B if the two columns are not the same length.) For example, if a two-column document is 97 rows long, the number you calculate will be  $97/2 = 48.5$  which you round up to 49.

You can fit a maximum of 54 lines on a standard AppleWorks page. If this number is greater than 54, you will have to print a multi-page document. See the section entitled "Multi-page Documents" later in this article.

You have now determined the desired length of column A.

9. Put the cursor in the cell immediately *below* the number you identified in step #7 (cell A50 in this example) and issue an Apple-M command. Indicate that you want to move a "block" within the worksheet. Move the contents of the bottom half of column A to the top of column B.
10. Issue an Apple-O command and set the characters per inch and platen width settings so they match your final document.
11. Issue a "PH" command to turn off the header that will print at the top of the spreadsheet.
12. Issue an Apple-P and "print" the entire spreadsheet "To the clipboard (for the word processor)".
13. Create a new word processor document with the

characters per inch and left margin settings you want in the final output. Set the right margin at 0.0 inches.

14. Issue an Apple-M command and import the text from the clipboard.

Don't be concerned if the document is improperly formatted on the screen; AppleWorks can only display 77 characters in each line on the screen and "wraps" any lines containing more than 77 characters. However, your text will print correctly. *Do not try to format the document on the screen.*

15. Add the underline, boldface, superscript, and subscript commands where necessary and save the file. Make no other text or formatting changes to the document.
16. Issue an Apple-P command and print the document.

### Multi-page Documents

As indicated earlier, if the calculations in step #8 yield a number greater than 54, your file is too long to print on a single page; you will have to print a multi-page document.

The easiest way to format a multi-page document is to treat the file as a series of single pages. That is, format the first 54 rows so they contain the text from the beginning of the document. Then follow steps #9-15 to transfer that page into the word processor and print the page. (The only difference in this procedure occurs in step #12, where you must print a "block" to the clipboard instead of printing the entire spreadsheet.) Then delete those rows from the spreadsheet and repeat the process to print the next page.

### Conclusion

These techniques make it easy to print multiple column documents with AppleWorks. The process goes quickly once you create blank word processor and spreadsheet files to serve as templates for this operation.

*[Barclay Clemesha is an atmospheric physicist with the Brazilian Space Research Institute. He writes Apple II software in his spare time.]*

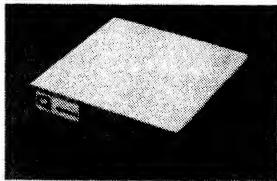
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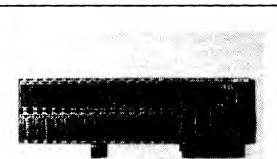
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# Two Patches that Limit Student Access

by John Link

---

*This article describes two patches that can keep students from accessing some of the functions in AppleWorks 3.0. The author assumes that you prepared the bootable BASIC disk that he described in the February 1990 issue of the AppleWorks Forum.*

---

**A**lthough the teaching profession offers many rewards, there are times when teachers face formidable opposition from some of their students. This can manifest itself in overt behaviors, such as acting out in class, or less obvious behaviors, such as damaging your software or cheating on work. This article describes two patches that help even the odds for computer-using educators working with these students.

The first patch forces students to save their work on a designated disk or in a specific subdirectory. That keeps students from exchanging work over a network (as, for example, during a test), helps keep novices from saving files where you don't expect to find them, and protects your disks and network from the clutter of unwanted AppleWorks files saved on inappropriate disks or directories.

The second patch deletes the "Other Activities" alternative from the Main Menu. That keeps students from deleting files, creating subdirectories, formatting disks, or changing any of the permanent settings in AppleWorks.

You will need a working copy of AppleWorks 3.0 and a disk I call the BASIC disk, which contains ProDOS and BASIC.SYSTEM. I described how to prepare that disk in the February 1990 issue of *AppleWorks Forum*.

These patches are not compatible with the network version of AppleWorks. Note that Corvus networks use the standard version of AppleWorks; AppleShare networks let you use either the standard or network version of the program.

Do not patch your original disks. Type carefully and check your work before pressing the Return Key. Re-enter the complete line if you find an error after pressing Return.

## **Patch 1: Disable Changing Disk or Pathname**

This patch disables any AppleWorks action that lets users choose from a list of available disk drives. It also disables the Apple-< command (which backs you out of a subdirectory) and the Apple-> command (which advances you into a deeper subdirectory). However, the student can still progress to a deeper subdirectory by pressing the Return Key when the inverse cursor is on a subdirectory. Since this patch disables Apple-< (the only command for backing out of subdirectories), students who open a subdirectory with the Return Key will not be able to leave it without quitting AppleWorks and relaunching. Relaunching restores the originally designated data location.

First you must configure AppleWorks so it contains the disk or pathname you want to become the permanent data location. Then you will install the patch.

Follow these steps:

1. Launch AppleWorks 3.0 and go to the Other Activities Menu.
2. Choose #6, "Select standard settings for AppleWorks".
3. Choose #5, "Select standard location of data disk" and select the location you want to make permanent.

4. Return to the Main Menu and quit AppleWorks.

Now that you configured AppleWorks, it is time to install the patch. Continue as follows:

5. Boot your computer with the BASIC disk or use any other way you know to launch BASIC.
6. Remove the BASIC disk and insert the AppleWorks 3.0 disk into the drive. (If you use 5.25-inch disks, insert the AppleWorks Startup Disk.)
7. Type the following (press the Return Key after each line):  

```
POKE 768,81
POKE 769,17
POKE 770,96
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L3, B$E66
POKE 768,76
POKE 769,154
POKE 770,57
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L3, B$18B3
```
8. If you use 5.25-inch disks, use a file utility program to copy the newly patched SEG.AW file from the AppleWorks Startup Disk onto each of your other AppleWorks Program Disks.

Follow these steps to cancel the patch and restore AppleWorks to its original condition:

1. Repeat steps #5 and #6 above.
2. Type the following:  

```
POKE 768,111
POKE 769,17
POKE 770,17
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L3, B$E66
POKE 768,160
POKE 769,0
POKE 770,140
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L3, B$18B3
```
3. If you use 5.25-inch disks, copy the file SEG.AW from the AppleWorks Startup Disk onto each of your other AppleWorks Program Disks.

### Patch 2: Disable "Other Activities"

This patch deletes the Other Activities Menu option from the Main Menu. That keeps students from deleting files, creating subdirectories, formatting disks, or changing any of AppleWorks' permanent settings. But it does not prevent temporarily

changing the data location, and is not a substitute for the first patch.

Proceed as follows:

1. Repeat steps 5 and 6 above. That gets you into BASIC and puts your AppleWorks disk in the correct drive.
2. Type the following:  

```
POKE 768,4
POKE 769,81
POKE 770,117
POKE 771,105
POKE 772,116
POKE 773,0
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L6, B$6E6
POKE 768,77
POKE 769,69
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L2, B$21D4
```
3. If you use 5.25-inch disks, copy the newly patched SEG.AW file from the AppleWorks Startup Disk onto each of your other AppleWorks Program Disks.

Follow these steps to cancel this patch and restore AppleWorks to its original condition:

1. Repeat steps #5 and #6 above.
2. Type the following:  

```
POKE 768,16
POKE 769,79
POKE 770,116
POKE 771,104
POKE 772,101
POKE 773,114
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L6, B$6E6
POKE 768,12
POKE 769,68
BSAVE /APPLEWORKS/SEG.AW, TBIN, A$3000, L2, B$21D4
```
3. If you use 5.25-inch disks, copy the file SEG.AW from the AppleWorks Startup Disk onto each of your other AppleWorks Program Disks.

### Prevent

To make this process easier and to save you typing, I wrote a program named "Prevent" that automatically installs these patches. Prevent verifies that the target copy of AppleWorks is version 3.0, checks the patch areas and reports whether or not the patches are installed, and then lets you reverse the

## Advanced Techniques...

current status. Thus Prevent installs and de-installs either or both of these patches.

[Ed: Prevent is available from NAUG's Public Domain Library on a 5.25-inch (\$4) or 3.5-inch (\$6) disk, plus \$2 s/h. The author owns the copyright to Prevent and released it exclusively for NAUG members. Thus, Prevent is not a public domain program and you are not free to distribute copies to others or post copies on electronic services. Our thanks to Mr. Link for writing Prevent and contributing the program to NAUG's library.

Mr. Link is the author of SuperPatch 7.0 and SuperPatchNet 1.0, both of which are available from Quality Computers. SuperPatch installs more than 150 patches in AppleWorks 2.x and 135 patches in AppleWorks 3.0. SuperPatchNet installs 41 patches in the network version of AppleWorks. Both programs offer valuable defensive patches not included in this article.

NAUG members who like to customize AppleWorks should also see the 31 patches in Mr. Link's articles in the February through April 1990 issues of the *AppleWorks Forum*.]

[John Link is a Professor of Art at Western Michigan University. He is an AppleWorks consultant, a frequent contributor to the *AppleWorks Forum*, and the developer of numerous AppleWorks enhancements.]

### TransWarp GS Update

The TransWarp GS cache upgrade shipped by Applied Engineering uses socketed components, not the soldered components used on the pre-production boards I tested. Although I prefer the new design, the production card is somewhat more difficult to install than the prototype. That is because the new piggy-back board can interfere with a resistor pack that protrudes from the TransWarp GS.

When installing the upgrade, use finger pressure to bend the resistors toward the top of the TransWarp GS card. Then put a small piece of cardboard under your fingers to protect yourself from the exposed ends of the soldered components as you push the piggyback board into place.

—John Link

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Package includes license to install LockOut on all floppy disks, hard disks, and file servers in a single building. Successfully used in over 150 school systems across the country. Written by John Link, author of SuperPatch. Satisfaction guaranteed, or your money back. \$10.00 + 2.00 S&H. Send to:

LockOut  
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Kalamazoo, MI 49004

# ZipGSX and TransWarp GS: Moving into the "Fast Lane"

by James Hirsch

**A**lthough some computer owners want fast computers for the same reasons that people like fast cars, boats, and airplanes, the desire for computing speed has an important practical component for many users. For example, business owners can quickly recover the costs incurred by speeding up their systems. Faster computers are also less intrusive, thus accelerated systems help writers and artists concentrate on their work. And recreational users get more satisfaction and are more productive when they use a faster system.

As a result, products that accelerate computers are popular enhancements for Apple owners. These products include hard disk drives, faster SCSI interface cards, faster printers, print buffers, and accelerators that replace the microprocessor in the computer and enhance the overall processing speed of the system.

Until recently, Apple IIGS owners who wanted faster processors had only one alternative, the popular Applied Engineering TransWarp GS card. However, Zip Technology recently introduced its ZipGSX line of low-cost accelerators that improve the processing speed of the IIGS. Zip offers 16 models of the GSX card: You can combine any of four processing speeds (7-10 MHz) with any of four cache sizes (8, 16, 32, and 64K).

## What I Tested

This article compares three configurations of the ZipGSX with two TransWarp GS cards. The Zip products include 8 MHz and 10 MHz ZipGSXs equipped with 16K of cache memory, and a 10 MHz ZipGSX equipped with 64K of cache. The TransWarp GS cards include a standard 7 MHz TransWarp GS with 8K of cache, and an enhanced TransWarp GS operating at 8 MHz and equipped

with 32K of cache. [Ed: See the articles entitled "Accelerate Your TransWarp GS Card" in the March and April 1991 issues of the *AppleWorks Forum* for step-by-step directions that describe how to install the 8 MHz/32K upgrade on an existing TransWarp GS accelerator.]

At \$200, the 8 MHz/16K ZipGSX is the lowest cost accelerator I believe serious Apple IIGS users should consider for their systems. The 10 MHz products represent the high-end units available from Zip.

The 7 MHz/8K TransWarp GS is the original Apple IIGS accelerator. I included the 8 MHz/32K version of the card so TransWarp GS owners can see the performance they will get from this easily-installed upgrade.

**"Every serious Apple IIGS user should own one of these accelerators."**

All the accelerators are DMA-compatible and take advantage of the DMA technology built into Apple's new High Speed SCSI Interface Card and CV Technology's RamFast card. [Ed: DMA-compatibility increases the speed of data transfer by letting the system load data directly into memory without accessing the CPU. See the sidebar entitled "Understanding Cache" on page 22 of the March 1991 issue of the *AppleWorks Forum* for a description of the function of the cache memory on these cards.]

## What You Get

The ZipGSX package contains a rudimentary chip puller, a 7-page manual, and a Utility Disk that includes a CDA, CDEV, application, and INIT that let you control the functions of the board. The Utility Disk also includes a clever and well-designed

runtime HyperStudio stack that graphically illustrates the installation and DIP switch configuration process. The excellent HyperStudio stack tries to compensate for the less-than-adequate manual that comes with the product, but unless you have two computers, you cannot view the stack during the installation and configuration process. Zip acknowledges the need for a more comprehensive manual and reports that a new 9-page manual will be available shortly.

The TransWarp GS includes a comprehensive 23-page manual that contains all the information you need to install, configure, and operate the card. I particularly appreciate the photographs in the manual that help you with the step-by-step installation process.

Both accelerators consist of a card and a ribbon cable connected to a chip-like plug that fits in the 65C816 processor socket in the IIGs.

The ZipGSX is a newer design that is smaller, uses fewer chips, consumes significantly less power, and runs much cooler than the older, but time-proven, TransWarp GS.

### Installing the Cards

You install both products by removing the 65C816 CPU from the IIGs motherboard, inserting the accelerator in a peripheral slot, and plugging the cable into the processor socket. The ZipGSX offers a non-functional empty socket you can use to store the 65C816 processor you remove from the motherboard; TransWarp GS owners must store the processor in a safe location ... and must remember where they put it.

If you haven't "pulled" a chip before, removing the CPU can be an unnerving experience. I used a standard kitchen spoon to remove the chip, despite the inclusion of the chip puller with the ZipGSX.

Installing and configuring these products is an easy, 10-15 minute process. The ZipGSX plugs into slot 2 or 3, the TransWarp into slot 3 or 4. Both cards let you retain the functions built into those slots.

The Zip products include DIP switches that let you control the speed of the slots in your computer; these switches come pre-set to accommodate a typ-

ical Apple IIGs configuration. The TransWarp GS accelerates the built-in ports in the IIGs, but not the slots. Thus, the TransWarp GS does not require nor offer DIP switches.

The TransWarp GS includes on-board firmware that lets you control the processor speed and perform other functions such as a self-test. The ZipGSX includes software you install in your System Folder that replicates the functions of the TransWarp GS firmware. The Zip software also lets you over-ride the DIP switch settings on the card.

### The Tests

The essence of any accelerator is its impact on the operating speed of the computer. Therefore, I conducted more than 140 tests comparing the speed of AppleWorks and AppleWorks GS (AWGS) running on Apple IIGs computers equipped with these accelerators.

My test equipment consisted of a ROM 3 Apple IIGs with five megabytes of memory, two Apple 3.5-inch drives, and one 5.25-inch drive. I repeated these tests on a system equipped with an Apple 40 SC hard drive and a IIGs connected to a Cutting Edge removable hard drive with over 18 CDAs, NDAs, INITs, and 1.4 megabytes of fonts. I also used the accelerators on systems connected to an AppleTalk network to test their network compatibility. Finally, I repeated these tests on a second, identically configured Apple IIGs to confirm my findings.

I tested the accelerators with AppleWorks 3.0 enhanced with UltraMacros and Word Count, and with AWGS 1.1. AppleWorks Classic is so fast that I could not reliably check its speed running on a system equipped with the 10 MHz/64K ZipGSX. (The times for this hardware/software combination were so short that they were impossible to measure accurately with the digital stopwatch I used for these tests.)

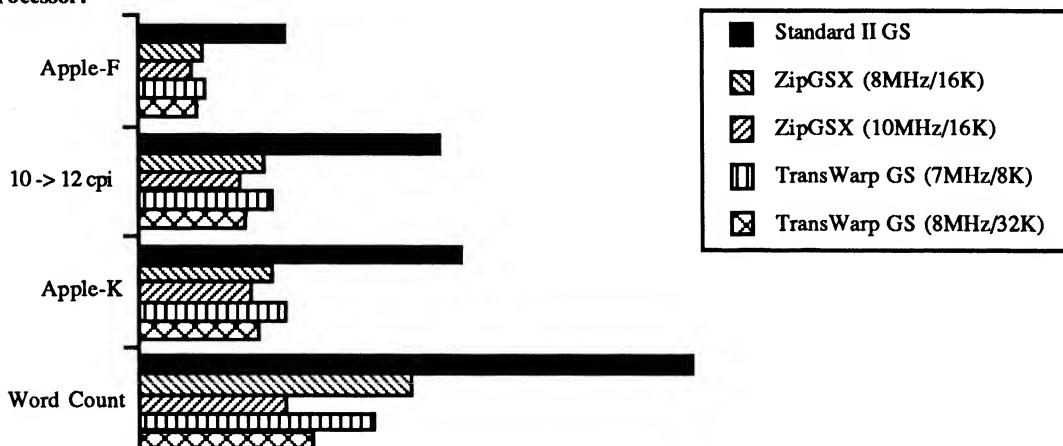
### AppleWorks 3.0 Tests

**Word Processor:** I used a 98K word processor file with 2,341 lines and 15,698 words for the following tests:

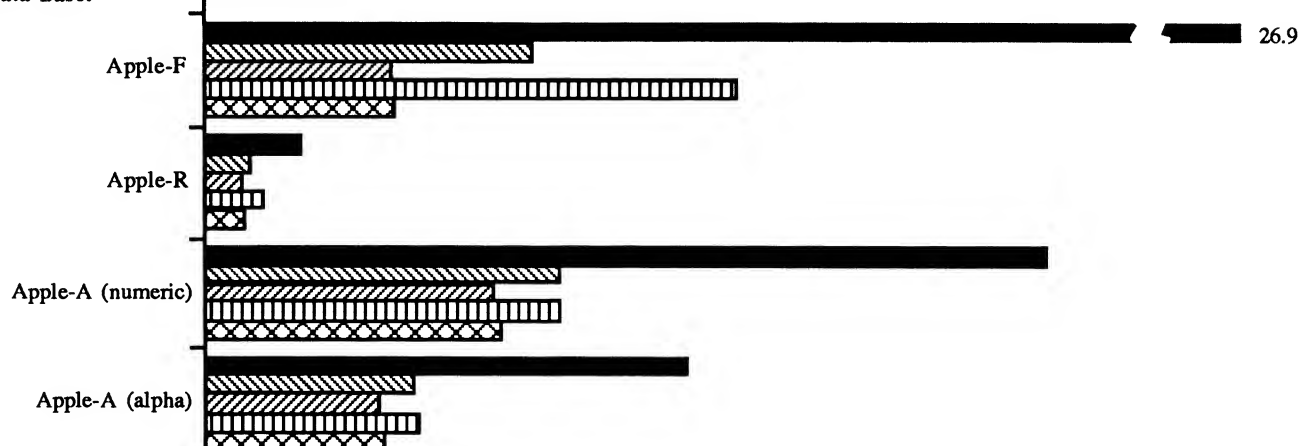
1. Use Apple-F to find text at the end of the document.

**Figure 1: AppleWorks 3.0 Tests**

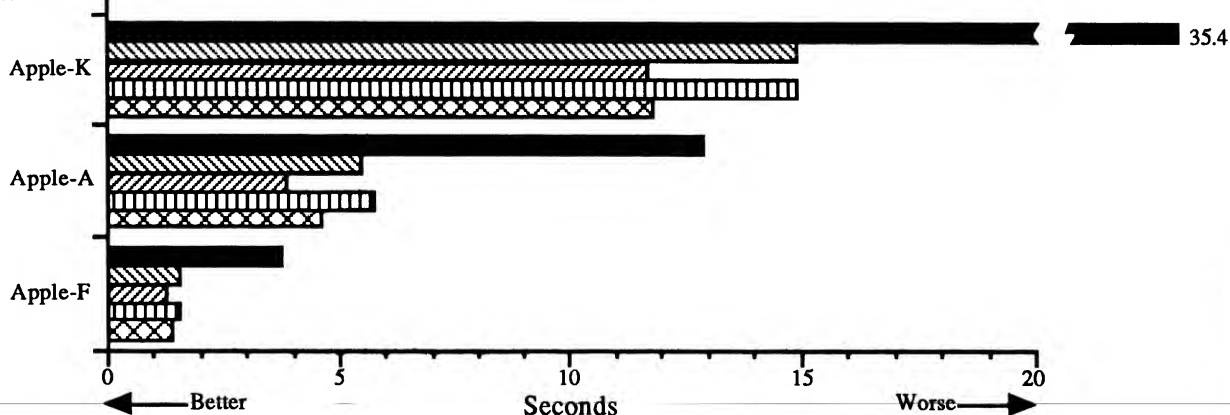
**Word Processor:**



**Data Base:**



**Spreadsheet:**



2. Reformat the document by changing the characters per inch from 10 to 12 cpi.
3. Use Apple-K to calculate the page breaks.
4. Use TimeOut Word Count to determine the number of words in the document.

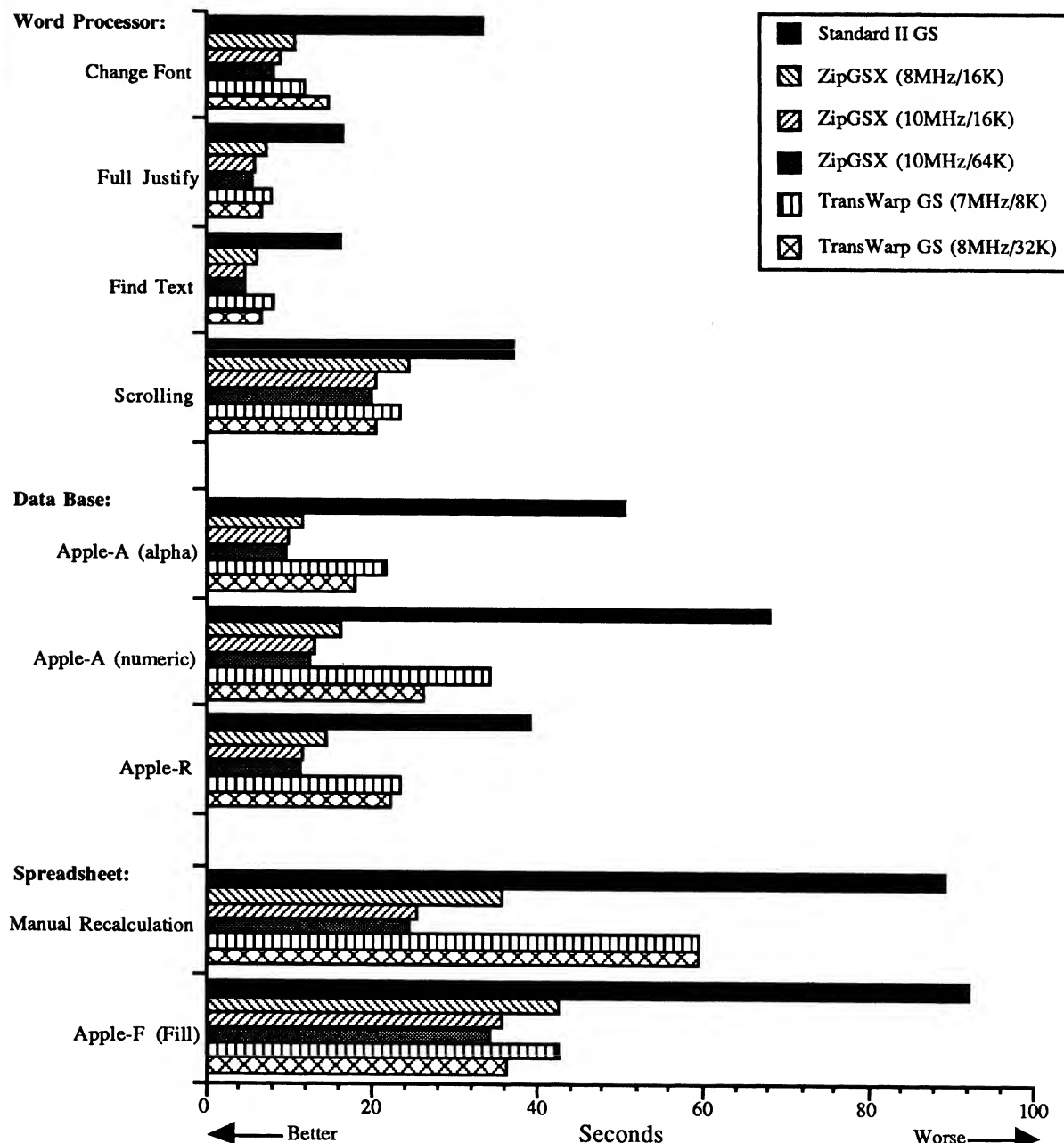
**Data Base:** I used a 137K file with 1,571 records

and 16 categories for the following tests:

1. Use Apple-F to find the last record in the file.
2. Use Apple-R to select all records that match a single selection rule.
3. Use Apple-A to sort the file numerically by Zip code.



**Figure 2: AppleWorks GS Tests**



4. Use Apple-A to sort the file alphabetically by city.

**Spreadsheet:** I used a 110K spreadsheet file consisting of 3,996 cells in 999 rows and five columns. Cell A1 contained a number; all the other cells contained a formula that added one to the value in the previous cell. I performed the following tests:

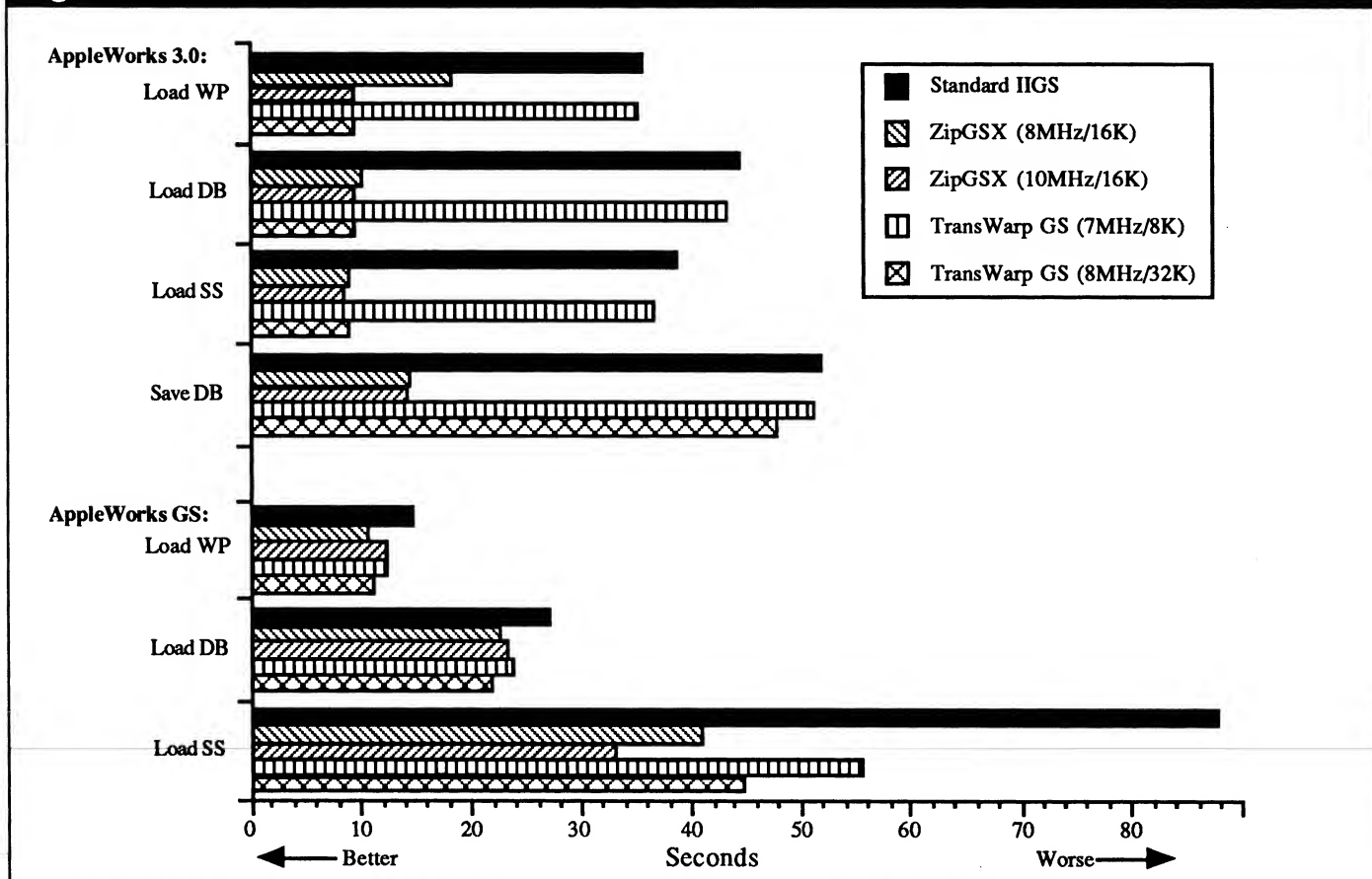
1. Use Apple-K to recalculate the spreadsheet.
2. Use Apple-A to sort the rows in reverse order.

3. Use Apple-F to find a label in cell C1000.

Figure 1 summarizes the results of the AppleWorks 3.0 tests with the different accelerators.

Over all, the 8 MHz ZipGSX-accelerated system ran 2.5 times faster than an unenhanced Apple IIgs; the 10 MHz ZipGSX was 3.3 times faster. The 7 MHz/8K TransWarp GS was 2.2 times faster than the standard system, and the 8 MHz/32K TransWarp GS was 3.1 times faster than an un-

**Figure 3: Additional Tests**



hanced Apple IIGS. In general, the differences between the accelerators were insignificant when using AppleWorks with all but the largest files.

## AWGS Tests

**Word Processor:** I translated the AppleWorks word processor file described above into AWGS format and performed the following tests:

1. Change the font of the document from Geneva to Helvetica with both fonts resident in memory.
2. Reformat the document by changing from left to full justification.
3. Find a string of characters at the end of the document.

I also tested the screen refresh rate by timing how long it takes to scroll through a four-page word processor document by depressing the Down-Arrow Key.

**Data Base:** I translated the AppleWorks data base file described above into AWGS format and per-

formed the following tests:

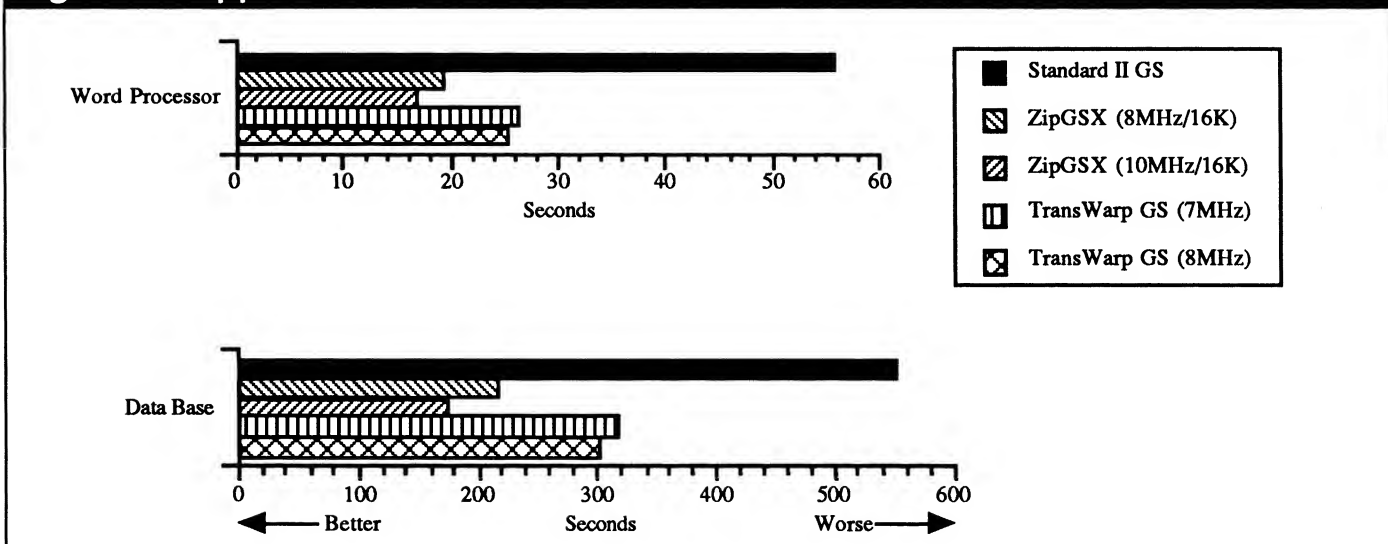
1. Use Apple-A to sort the file alphabetically by city.
2. Use Apple-A to sort the file numerically by Zip code.
3. Use Apple-R to select all records that match a single selection rule.

**Spreadsheet:** I translated the AppleWorks spreadsheet file described above into AWGS format and conducted the following tests:

1. Manually recalculate the spreadsheet.
2. Use the Fill Command to copy a formula into 25 cells.

As you can see from *Figure 2*, both accelerators significantly improve the speed of the AWGS word processor. The AWGS data base ran significantly faster with the Zip accelerators than with the TransWarp GS. The ZipGSX products also performed better when calculating a spreadsheet, but

**Figure 4: AppleWorks GS File Conversion**



all the accelerators performed similarly when using AWGS's Fill function.

## Additional Tests

While conducting these tests, I noticed some differences in the time it took to load files from a floppy disk into memory on standard and accelerator-equipped computers.

The data in *Figure 3* suggests that the ZipGSX and the 8 MHz TransWarp GS card significantly reduce the time it takes to load AppleWorks 3.0 files from the disk. The standard 7 MHz TransWarp GS had little impact on these loading times. In addition, the Zip takes significantly less time to save files on disk; the TransWarp GS products did not accelerate the saving process.

The accelerators have little impact on the time it takes to load and save AWGS word processor and data base files, but all the accelerators significantly reduce the time it takes AWGS to load a spreadsheet file. This is understandable, since AWGS loads the file and then recalculates the worksheet. The accelerators dramatically speed up the spreadsheet calculation process and thus reduce the time it takes for a large spreadsheet to appear on the screen.

Finally, I examined the effect of these accelerators on AWGS' ability to import and convert AppleWorks 3.0 word processor and data base files. Those results appear in *Figure 4*. (It took AWGS so long to import the large spreadsheet file that I didn't have the patience to time the process.)

All the accelerators significantly reduced the time it takes AWGS to import AppleWorks files. However, the Zip-enhanced IIGS was noticeably faster than the TransWarp GS product at these operations.

## Compatibility

All the accelerators proved compatible with my test suite of programs, which includes AppleWorks 3.0, AWGS, GraphicWriter III, Platinum Paint, HyperStudio, and SHRConvert.

The TransWarp GS products were compatible with all my hardware, including a Quickie scanner and a ComputerEyes video digitizer.

The ZipGSX was compatible with the Quickie. However, my tests with the video digitizer were initially unsuccessful because the ZipGSX induced significant distortion in the digitized image. All went well after I ignored the instructions in the manual and changed a setting that slowed down the slot with the digitizer.

The final hardware test involved using the accelerators on a system connected to an AppleShare file server via LocalTalk. The TransWarp GS models worked flawlessly with the AppleTalk/IRQ left on (a factory setting). The Zip products were not totally compatible with AppleTalk; I had to slow down the GSX cards before they would work correctly on the network. (The 8 MHz card was AppleTalk-compatible at 87% of normal GSX speed; the 10 MHz model operated correctly at 75% of normal speed.) All network services were available at

these lower speeds, including data sharing, program loading, and printing to both AppleTalk ImageWriters and LaserWriters.

Using AppleTalk connectors to print on a single LaserWriter from a IIGS yielded different results. The TransWarp GS again performed flawlessly and required no adjustments. The ZipGSX products could not print to an AppleTalk printer in that configuration. Zip assured me that the company would soon release an INIT that will install the proper AppleTalk delays for this setup, but (a) that INIT was not available three months later when this article went to press, and (b) slowing up the accelerator defeats its primary function in your system.

### Support

My experience with these products suggest that neither Zip nor Applied maintain acceptable standards for technical support. My first three long distance calls to Zip were answered by a helpful receptionist. However, it took three tries, plus one promised, but unreturned phone call, to talk to a technical support person. Once on the phone, the technician was knowledgeable about the Zip products and other GS hardware and software. Apparently, Zip can provide high levels of technical support once you get to the right person.

Applied Engineering's technical support number was often busy but once I got through, the technical support representative was knowledgeable about the company's product and provided the help I needed. Applied has since instituted a new technical support service that charges \$1.50 per minute for help. Although that will reduce the busy signals and make it easier to contact the company, I find that policy inexcusable when you want help with a potentially defective product or solutions to a configuration problem not discussed in the manual.

### Conclusions

Both the ZipGSX and the TransWarp GS cards dramatically accelerate the speed of a standard Apple IIGS computer; every serious Apple IIGS user should own one of these accelerators. In addition, the new low prices for the Zip accelerators make the Zip products particularly attractive.

AppleWorks and AWGS word processor users will be happy with any of these accelerators. There was little difference between these products when using the AppleWorks or AWGS word processor.

Serious AWGS data base and spreadsheet users should consider the ZipGSX; AWGS data base and spreadsheet calculations were significantly faster with the Zip products than with the TransWarp GS cards.

Apple IIGS owners using an AppleTalk network or using hardware-intensive systems should favor the TransWarp GS accelerators. These are time-tested, reliable products that are fully compatible with AppleTalk and appear compatible with all popular IIGS accessories.

If you want the latest technology, if money is no object, if you are not using AppleTalk, and if you use processor-intensive programs such as AWGS, the 10 MHz/64K ZipGSX is the fastest of the accelerators. However, AppleWorks users will find it difficult to justify the \$400 price of this product.

*[List prices: ZipGSX: 7 MHz/8K, \$149.95; 8 MHz/16K, \$198.90; 9 MHz/16K, \$228.90; 10 MHz/32K, \$349 plus \$49.95 for each 32K cache upgrade. At press-time Applied announced new prices for the TransWarp GS. The 7 MHz/8K TransWarp GS now lists for \$299. The 7 MHz/32K TransWarp GS lists for \$399. A comparison of the performance of these two cards appears in the article entitled "Accelerate Your TransWarp GS" in the March 1991 issue of the AppleWorks Forum. Applied products are available at significant discounts from mail order dealers.]*

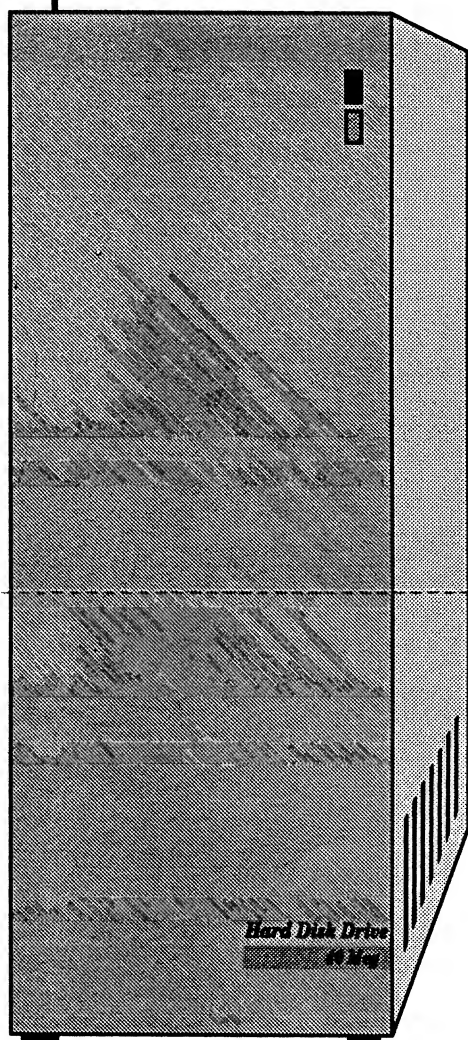
*[Applied Engineering, Box 5100, Carrollton, Texas 75011; (214) 241-6060.]*

*[Zip Technology, 5601 West Slauson Avenue, Suite 190, Culver City, California 90230; (213) 337-1313.]*

*[James Hirsch is a computer consultant to the Anoka-Hennepin (MN) Schools. AppleWorks continues to be one of the most-used software packages in all 40 buildings he serves.]*

# The **Apple II Hard Disk Primer**

**T**he **Apple II Hard Disk Primer** tells you everything you need to know to use a hard disk drive with your Apple II computer. The Primer teaches you how to select, install, configure, and use a hard disk system with AppleWorks, AppleWorks GS, desktop publishing programs, and all other popular Apple II applications. The author describes the necessary procedures in a step-by-step fashion that is easy to read and understand.

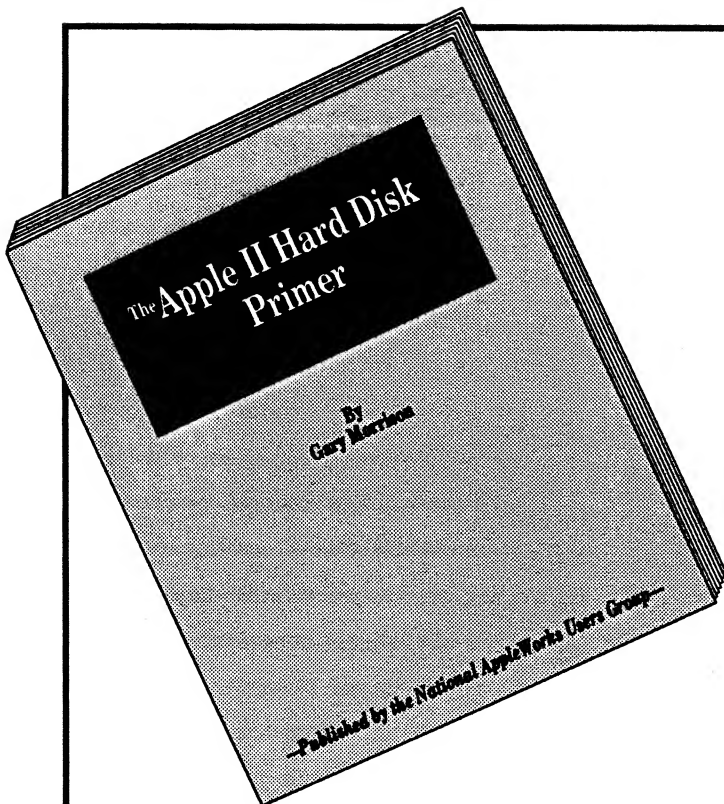


The chapters in this book describe:

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- ◆ How to connect a hard disk to your computer.
- ◆ How to configure your computer for a hard disk.
- ◆ How to install an operating system.
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- ◆ How to use hard disk management software.
- ◆ How to install AppleWorks and AppleWorks enhancements on a hard disk.
- ◆ How to install AppleWorks GS and other 16-bit programs.
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# Automatically Load Files onto the Desktop

by Keith Johnson

This month's macros are for AppleWorks 3.0 users who regularly load one or more files onto the desktop when they launch AppleWorks. That includes anyone who stores friends' addresses and phone numbers in a data base file, keeps a list of "Things To Do" in a word processor file, or loads word processor or other templates onto the desktop at bootup.

The macros in *Figure 1* automatically load two files onto the desktop as part of the bootup process. In this example, the files must come from the standard location of your data disk. However, you can easily modify the macros to load any number of files or to accommodate files from different subdirectories or different devices.

The macros assume that:

1. You use AppleWorks 3.0 (earlier versions also support autostartup macros, but the launch process for AppleWorks is different).
2. AppleWorks is on one disk; either a hard disk or a 3.5-inch disk.
3. You use an Apple IIGS or have a ProDOS clock installed in your computer.

## Understanding the Macros

The <ba-`> macro in *Figure 1* is the main macro that locates the files on the disk. You must substitute the file names for "My File 1" and "My File 2" in the macro.

The <ba-~> macro is a subroutine that marks the files for loading and contains error checking routines that report if AppleWorks cannot find the files. UltraMacros' <find> token automatically sets variable z to zero if it cannot find the file you specify. The <find> token works like the Find command in

AppleWorks; that is it only checks from the current cursor position to the end of the list of files. The <oa-1> token at the end of the subroutine sends the highlight to the beginning of the catalog so it checks the names of all files on the disk. The subroutine checks for z = 0 and displays an error message showing the name of the missing file.

## How to Use the Macros

Follow these steps to compile the macros and configure UltraMacros so the macros run automatically each time you launch AppleWorks:

1. Substitute the names of the files you want to load for the text "My File 1" and "My File 2" in the macro.
2. Put these macros after the word "start" at the beginning of the word processor file that contains your default macros. Follow these steps if you don't store your macros in a word processor file:
  - A. Create a blank word processor document called "macros" or any other name you want.
  - B. Invoke the Macro Compiler from the Time-Out Menu and indicate that you want to display the current macro set. The macro compiler will create a word processor document that contains your macros.
  - C. Type the macros in *Figure 1* after the word "start" and before any other macros in the list.
  - D. Issue an Apple-S command and save the macros in an AppleWorks word processor file on a disk.
3. Use the Macro Compiler to recompile the macros. That creates a macro set that contains

# My Favorite Macro...

the new macros. Now you must tell UltraMacros to launch these macros at bootup.

4. Select Macro Options from the TimeOut Menu and choose # 3, "Save macro table as default set". Answer "Yes" to the question "Activate autostartup macro?". That tells UltraMacros to run the first macro whenever you launch AppleWorks.
5. Quit AppleWorks and then re-start the program. The macros in *Figure 1* should leave you at the Desktop Index with two files loaded into desktop memory.

## Customizing the Macros

The macros in *Figure 1* automatically load two files onto the desktop at bootup. You can change the number of files by deleting or adding lines to the macros. To increase the number of files, add the line \$Ø = "My File 3" : find : ba~ : before the last line (rtn>!) in the main macro. Delete the cor-

responding commands if you want to only load one file onto the desktop.

## If You Don't Have a Clock

As indicated earlier, the macros in *Figure 1* assume that you run AppleWorks on an Apple IIGs or on an Apple IIe, IIC, or compatible equipped with a ProDOS clock. When you launch AppleWorks 3.0, the program senses this clock and loads without prompting you for the date.

By comparison, AppleWorks 3.0 asks you to enter the date manually when you launch the program on a clock-less system. *Figure 2* contains additional lines that let you run these macros on a clock-less computer. Add these lines immediately following the first line in the <ba-`> macro if you do not have a clock in your Apple IIe or IIC.

The commands in *Figure 2* define a loop where "k = key" stores one keystroke. If the value of k is 13, the user pressed the Return Key and is finished

**Figure 1: Macros that Automatically Load Files onto the Desktop**

```
<ba-`>: <all :                                { Define the macro. Startup macros must be "all". }
rtn : rtn :                                    { Add files from the current disk. }
$Ø = "My File 1" :                             { Store the first file name in variable $Ø. }
find :                                          { Find the file in the catalog. }
ba~ :                                          { Call the error checking subroutine. }
$Ø = "My File 2" :                             { Store the second file name in variable $Ø. }
find :                                          { Find the file in the catalog. }
ba~ :                                          { Call the error checking subroutine. }
rtn>!                                          { Load the files onto the desktop and stop. }

<ba-~>: <asr :                                { Error checking subroutine. }
if z=Ø then                                    { If file is not found... }
  esc : esc :                                  { ...return to the Main Menu... }
  msg ' Could not find the file "' + $Ø + '". Press any key. ' : { ...display a message... }
  k = key :                                    { ...wait for a keystroke... }
  msg '' : stop :                              { ...clear the message...and stop. }
else :                                          { If the file is found... }
  print chr$ 21:                               { ...mark the file with a Right Arrow. }
  oa-1>!                                       { ...and return to the beginning of the disk catalog. }
```

**Figure 2: Additional Lines that Add Clock Support**

```
begin :                                         { Begin loop that accepts date input. }
k = key :                                       { Capture the first keypress. }
if k = 13 then exit :                           { Exit the loop if the user pressed the Return Key. }
else : print chr$ k :                           { Otherwise, pass the keystroke on to AppleWorks. }
rpt :                                           { Then repeat the loop and capture the next keypress. }
rtn :                                           { Finally, enter a Return to enter the date into AppleWorks. }
```

## My Favorite Macro...

entering the date. The <exit> token brings you out of the loop and tells UltraMacros to perform the rest of the macro, which consists of a <rtm> token that tells AppleWorks to accept the date entry.

If the keystroke is anything other than a Return, the "print chr\$ k" passes the keystroke on to AppleWorks. That lets you press any key including the Right or Left Arrow Keys, the slash, or a number. The <rpt> token re-starts the loop to capture the next keystroke.

This portion of the macro does no error checking. If you mistakenly enter "4/35/92", AppleWorks will not accept the entry and will ask you to try again. However, the macro does not trap this mistake and will not perform correctly. In theory, it would be possible to do error checking from within the macro, but I don't believe it is worth the programming effort.

### Other Possibilities

There are many other ways to enhance these macros. For example, if your first file contains an outline used by Randy Brandt's "Outliner", you can replace the last line in the <ba-`> macro with the lines

```
oa-q :      { Display the Desktop Index... }
rtm :      { ...select the first file... }
print chr$ 171>! { ...start Outliner. }
```

That will load the files, bring the first file onto the screen, and launch Outliner. This works because the ASCII value of "+" is 43. To add an Open-Apple to any normal character, you add 128 to its ASCII value. Thus, Open-Apple+, the keystroke you need to launch Outliner, has an ASCII value of 171.

Or you could have the macro launch the TimeOut Calendar program, or the Dialer, or whatever. If you come up with an interesting variation on this theme, let me know.

*[Keith Johnson is Associate Director of the Fleishmann Planetarium at the University of Nevada.]*

## Advanced Techniques

### Mouse Patch for the Apple IIc

by Randy Brandt and Mark Munz

Many Apple IIc owners use all the features of TimeOut UltraMacros ... except one. Until now, some IIc owners could not use their mouse with AppleWorks 3.0.

Thanks to the help we received from Matt Deatherage at Apple Computer, we have now developed a patch that lets UltraMacros owners use their mouse with AppleWorks 3.0 running on any IIc computer. This patch modifies your UltraMacros disk; you should install the patch on a backup copy of UltraMacros, re-install UltraMacros in AppleWorks, and then use the Macro Options to enable the mouse. Follow these steps:

1. Launch a ProDOS version of BASIC. [Ed: See the sidebar entitled "How to Launch Basic" in the December 1990 issue of the *AppleWorks Forum* for directions that describe how to prepare a bootable disk that launches BASIC.]
2. Insert a copy of UltraMacros in a drive and type the following (press the Return Key after typing each line):

```
BLOAD /ULTRAMACROS/ULTRA.30,TSYS,A768,L1,B$741
PRINT PEEK (768)
```

BASIC should display the value 192. If it displays any other value, you do not have version 3.1 of UltraMacros and should get the current version before proceeding.

3. Type the following:

```
POKE 768,16
BSAVE /ULTRAMACROS/ULTRA.30,TSYS,A768,L1,B$741
```

4. Boot your computer with the patched UltraMacros disk and reinstall UltraMacros in your working copy of AppleWorks.
5. Re-enable the mouse by selecting Macro Options from the TimeOut Menu, then select "Other Activities" and "Reactivate the mouse".

Note that this patch is only for Apple IIc users. Owners of Apple IIe or IIGS systems should not install this patch.



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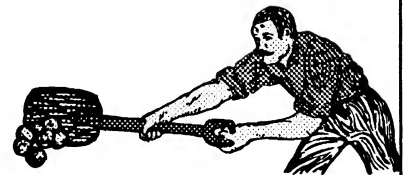


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U N L E A S H T H E P O W E R ®



# A Loan Amortization Template

by Stan Hecker

If you ever borrowed money for a house, you know that most of your early payments go to pay the interest. As the loan ages, more of the monthly payment goes to principal. An “amortization table” tracks the amount that goes to principal and interest from each payment. Amortization tables can also tell you the balance of the principal at the end of each month, and the amount of principal and interest paid to date. Thus, amortization tables can help you make decisions regarding investing, taxes, borrowing, and repaying a loan.

This month, I will describe a simple, small, flexible, and powerful amortization template developed by Tom Weishaar (see *Figure 1*). You can use Mr. Weishaar’s table for any loan, with any fixed or variable interest rate, and with loans that require a balloon payment. The template requires little desktop memory and works with all versions of AppleWorks and with most other spreadsheet programs.

## Creating the Template

*Figure 2* presents a detailed view of the template that you can type into AppleWorks. Note the way Mr.

Weishaar used the @SUM function in cell C7 to add everything in row 6 except the interest rate. You can also use this technique to put a grand total of both a row and column at their intersection or to skip over subtotals in a long column of figures. Also note the overall “economy” of the template; three simple functions and three cell references can amortize any loan.

Follow these steps to create your version of the

**Figure 1: Weishaar’s Amortization Template**

File: GOLIAH		REVIEW/ADD/CHANGE				Escape: Main Menu	
	A	B	C	D	E	F	G
1							
2							
3	Year	Period	Bgn Bal	Remit at	Int Rate	Interest	Remit at
4				prd start	/ Period	Amount	prd end
5							
6	1		0.00	0.00	0.00	0.00	0.00
7			0.00	0.00	0.00	0.00	0.00
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
-----							
A1							
Type entry or use ⌘ commands							
984K Avail.							

**Figure 2: The Detailed Template**

File: GOLIAH		REVIEW/ADD/CHANGE				Escape: Main Menu	
	C	D	E	F	G		
1							
2							
3	Bgn Bal	Remit at	Int Rate	Interest	Remit at		
4		prd start	/ Period	Amount	prd end		
5							
6	0	0	0	(C6+D6)*E6	0		
7	@SUM(C6...D6,F6...G6)	+D6	+E6	(C7+D7)*E7	+G6		
8							
-----							
A1							
Type entry or use ⌘ commands							
984K Avail.							

template (I will assume that you know the basics of spreadsheet operation. If not, I suggest that you review pages 1-37 in NAUG’s 60-page pamphlet entitled “How to Get Started with the Spreadsheet Module” [Ed: \$7.50 plus \$1.75 s/h from NAUG].):

1. Create a new spreadsheet called GOLIAH (Mr. Weishaar’s name for the template; you can use any name you wish).

## My Favorite Template...

2. Use the Apple-V command to expand the default column width to ten characters wide. That is, make the columns one character wider than the default setting.
3. Issue another Apple-V command, select "Recalculate", and change the order of calculations to "Rows". That eliminates the need for repeated calculations when you enter data into the spreadsheet.
4. Issue a third Apple-V command, select "Recalculate", and change the frequency of calculations to "Manual". That speeds up the data entry process by telling AppleWorks not to calculate the results until you issue an Apple-K command.

**Figure 3: A One-Year Loan**

File: GOLIAH.YEAR      REVIEW/ADD/CHANGE      Escape: Main Menu

---

A One-Year-Loan Amortization Schedule

1	A	B	C	D	E	F	G	H
2								
3	Year	Period	Bgn Bal	Remit at	Int Rate	Interest	Remit at	
4				prd start	/ Period	Amount	prd end	
5								
6	1	JAN	1200.00	0.00	.0125	15.00	-108.31	
7		FEB	1106.69	0.00	.0125	13.83	-108.31	
8		MAR	1012.21	0.00	.0125	12.65	-108.31	
9		APR	916.56	0.00	.0125	11.46	-108.31	
10		MAY	819.70	0.00	.0125	10.25	-108.31	
11		JUN	721.64	0.00	.0125	9.02	-108.31	
12		JUL	622.35	0.00	.0125	7.78	-108.31	
13		AUG	521.82	0.00	.0125	6.52	-108.31	
14		SEP	420.03	0.00	.0125	5.25	-108.31	
15		OCT	316.97	0.00	.0125	3.96	-108.31	
16		NOV	212.62	0.00	.0125	2.66	-108.31	
17		DEC	106.97	0.00	.0125	1.34	-108.31	
18								

---

A1  
Type entry or use ⌘ commands      984K Avail.

5. Use the Apple-L command to make column A five characters wide and column B eight characters wide.
6. Enter the labels, formulas, and cell references from *Figure 2*. Make certain that you type your entries in the cells shown in *Figure 2* and that you enter the zeros in line 6 as zeros, not as the letter "O". Note that column C is the left-most column in *Figure 2*.
7. Put the label "Year" in cell A3 and the label "Period" in cell B3.
8. Use Apple-V to set Value Formats to fixed, with two decimal places.
9. Use Apple-L to set column E to fixed value format with four decimal places.
10. Use Apple-L to right-justify the column headings.
11. Issue an Apple-S to save your work.

### Extending the Template

Now you will expand the template to accommodate twelve monthly payments on a one-year consumer loan (see *Figure 3*). Follow these steps:

1. Use the Apple-N command to rename the template GOLIAH.YEAR.

2. Next you will make ten copies of the contents of cells C7 through G7. Put the cursor on cell C7, press Apple-C, choose "Within Worksheet," and press the Right-Arrow Key four times. That highlights cells C7 through G7. Then press the Return Key.
3. Move the cursor to cell C8, press the Period Key and then press the Down-Arrow Key nine times. Then press the Return Key.
4. AppleWorks asks if cell references should be "No Change" or "Relative". You want "Relative". Issue an Apple-R if you use AppleWorks 3.0. Otherwise, hold down the letter "R" until your computer starts to beep.

### Data Entry

Your spreadsheet is now ready to display any one-year loan with monthly payments. Imagine that you want to prepare a table to describe the payments for a \$1,200 loan with 15% interest and monthly payments of \$108.31. Follow these steps to enter data in your amortization template:

1. Enter 1200 in cell C6 to indicate you are borrowing \$1,200. Enter a positive number because this is money you are putting in your pocket.
2. Enter .15/12 in cell E6 to indicate you are borrowing at a 15% annual interest rate.

**Figure 4: A 30-Year Loan**

```

File: GOLIAH.30.YR          REVIEW/ADD/CHANGE          Escape: Main Menu
=====A=====B=====C=====D=====E=====F=====G=====H=====
1|          A Thirty-Year Amortization Schedule
2|
3| Year Period      Bgn Bal  Remit at  Int Rate  Interest  Remit at
4|                  prd start / Period   Amount    prd end
5|
6| 1 JAN          50000.00      0.00      .0083      416.67     -438.79
7| 1 FEB          49977.88      0.00      .0083      416.48     -438.79
8| 1 MAR          49955.57      0.00      .0083      416.30     -438.79
9| 1 APR          49933.08      0.00      .0083      416.11     -438.79
10| 1 MAY         49910.39      0.00      .0083      415.92     -438.79
=====A=====B=====C=====D=====E=====F=====G=====H=====
360| 30 JUL        2548.56      0.00      .0083      21.24     -438.79
361| 30 AUG        2131.01      0.00      .0083      17.76     -438.79
362| 30 SEPT       1709.98      0.00      .0083      14.25     -438.79
363| 30 OCT        1285.44      0.00      .0083      10.71     -438.79
364| 30 NOV         857.36      0.00      .0083       7.14     -438.79
365| 30 DEC         425.71      0.00      .0083       3.55     -429.26
366|              .00          0.00      .0083       .00          .00
=====
A1
Type entry or use ␣ commands
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```

- Enter -108.31 in cell G6 to show that your monthly payment is \$108.31. You enter a negative number because this is money out of your pocket.
- Enter an Apple-K to tell AppleWorks to calculate the results of all the formulas. Your results should look like the example in Figure 3.

You can add abbreviations for the months and any other formatting details to help you read your output. For example, many users like to summarize the year's interest and principal payments separately at the bottom, or in column H. You can calculate the principal paid by subtracting the interest paid from the total payments.

## Options

Figure 4 shows the template expanded to accommodate a 30-year fixed rate mortgage at \$50,000 with 10% interest. You can add balloon payments at the start or end of any month or change the interest rate in any month. Watch the end of the loan to figure out your payment amount or the new ending date of the loan.

If you don't have enough memory to accommodate the 44K desktop this table requires, you can develop a 10-year table and enter the data for each decade.

## Summary

Amortization templates can help you track your equity in your home, your net worth, and many of the tax consequences of a mortgage or business loan. Mr. Weishaar's flexible template makes it easy to accommodate balloon payments, adjustable interest rates, and other financial arrangements that add complexity to an installment loan. It is obvious why robust and simple amortization templates like Mr. Weishaar's are popular and useful.

*[Stan Hecker is on the administrative staff at Michigan State University, East Lansing, Michigan, and is a partner in H&H Consulting, a Michigan concern specializing in school district financial and population analyses.]*

*Tom Weishaar is the publisher of A2-Central and the founder of several other Apple II enterprises.]*

## Corrections

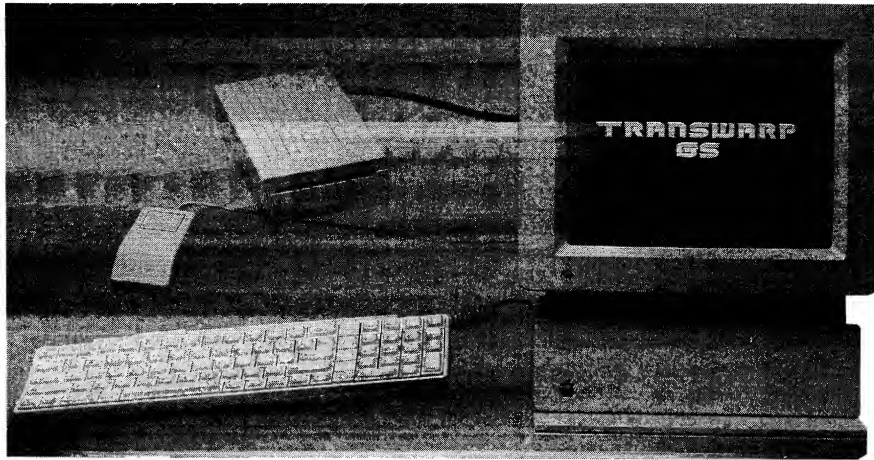
April 1991, page 3: Change the telephone number for Microsoft to: (800) 426-9400.

April 1991, page 22: The correct NAUG price for InWords is \$77.95, not \$79.95. NAUG maintains a "satisfaction guaranteed or your money back" policy with InWords and with all other products that NAUG distributes to its members.

April 1991, page 28: The description of Robert Merrill's stand-alone genealogy program called Family Tree did not mention that the program can automatically convert data from the LDS Personal Ancestry File for the Apple II family into the Family Tree data base. (The only information not converted is the church ordinance data.) Mr. Merrill extended the special NAUG price of \$29.95 (including s/h) until September 1 (list price: \$39.95). See the original article for the details about this product and special offer. Specify if you want 5.25-inch or 3.5-inch disks when you order.

## NAUG BBS

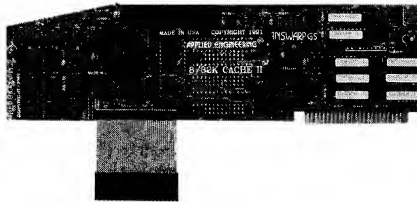
Congratulations to Ramelle McCoy of Mifflintown, Pennsylvania, the 55,000th caller to the Electronic Forum, NAUG's AppleWorks Bulletin Board. Mr. McCoy won a one-year extension to his NAUG membership. Call the Electronic Forum for help with AppleWorks or to download templates, fonts, or utility programs. A free service of NAUG. (313) 736-8102.



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# How to Enhance Your Reports

Dan Verkade

*This is the twelfth in a series of articles that describe how to use TimeOut ReportWriter to enhance the power of AppleWorks. The author assumes that you completed the tutorials in the previous articles in this series.*

Last month you learned how to produce reports that include subtotals and group totals. This month you will learn how to enhance the format of the report, how to print subtotals for multiple groups, and how to produce grand totals.

## Enhancing the Readability

The report you produced last month looked like this:

State	City	Amount
-----	-----	-----
Arizona	Phoenix	1000
Arizona	Flagstaff	1600
Arizona	Yuma	1200
		3800
Wyoming	Cheyenne	2100
Wyoming	Casper	1300
Wyoming	Sheridan	900
		4300

The report includes all the correct figures, but is not easy to read. Let's enhance its readability by adding some labels, underscores, and spacing.

Follow these steps:

1. Load the PencilSales data base you created last month onto your AppleWorks desktop.
2. Launch ReportWriter and create a new report called SalesReport2 following the layout in *Figure 1*. The number in parentheses to the right of each field indicates the order you should follow when creating the fields; do not enter the parentheses or the numbers into the report.

Data for the ReportWriter fields appears in *Figure 2*. PencilSales is the Master File. Accept the defaults for all ReportWriter field definitions

**Figure 1: Format for SalesReport2**

File: SalesReport2			EDITOR	Escape: Main Menu
State	City	Amount		
-----	-----	-----		
***** (1)	***** (2)	***** (3)		H
		***** (4)		B
	Total...	***** (5)		
		***** (6)		S
-----				
Type entry or use ⌘-commands			Row: 1 Col: 1	⌘-? for Help

**Figure 2: Field Definition Table**

Fld Num	Fld Name	Source	Category or Formula	Print	Type
1	State	Master	State	Always	Text
2	City	Master	City	Always	Text
3	Amount	Master	Amount	Always	Numeric
4	Underscore	Calc	"-----"	When State changes	Text
5	Total	Calc	@SUM(Amount)	When State changes	Numeric
6	Space	Calc	" "	When State changes	Text

that do not appear in the table. Set all Numeric formats to "Fixed" with zero decimal places.

3. Enter an Apple-G to generate the report. Your output should look like this:

State	City	Amount
----	----	-----
Arizona	Phoenix	1000
Arizona	Flagstaff	1600
Arizona	Yuma	1200
		-----
	Total...	3800
Wyoming	Cheyenne	2100
Wyoming	Casper	1300
Wyoming	Sheridan	900
		-----
	Total...	4300

**Figure 3: Format with Text in Subtotal Line**

File: SalesReport2			EDITOR	Escape: Main Menu
State	City	Amount		
-----	-----	-----		
*****	*****	*****	H	
		*****	B	
*****		*****		
		*****	S	
Type entry or use ⌘-commands Row: 1 Col: 1 ⌘-? for Help				

**Figure 4: Addition of Grand Total**

File: SalesReport2			EDITOR	Escape: Main Menu
State	City	Amount		
-----	-----	-----		
*****	*****	*****	H	
		*****	B	
*****		*****		
		*****	S	
		*****		
	Grand Total	*****	C	
Type entry or use ⌘-commands Row: 1 Col: 1 ⌘-? for Help				

Note how the underscores, blank lines between groups, and the inclusion of the word "Total" enhance the readability of the report.

You can create subtotal labels by entering the text of each label into the ReportWriter Editor. Labels you add with this method only print when you print the line containing the subtotals.

4. For even more clarity, you can incorporate the state name into the subtotal labels. To do this, you must replace the text "Total..." on the subtotal line with a new field and define the field so it prints whenever you print the subtotals. Follow these steps:
  - A. Return to the ReportWriter Editor.
  - B. Place the cursor in row 5, column 6. Display the overstrike cursor.
  - C. Use the Control-F key combination to add a field 18 spaces long. The report format should look like the example in Figure 3.
  - D. Name the new field "TotalFor"; its source is "Calculation". Enter the formula as @CONCAT("Total for ",State). The Field type is Text. This field must print "When State changes" and should be right justified.

5. There is no reason to print the name of the state on each line of the report body. Redefine the State field so it prints only "When State changes".

6. Enter an Apple-G to generate a report that should look like this:

State	City	Amount
----	----	-----
Arizona	Phoenix	1000
	Flagstaff	1600
	Yuma	1200
Total for Arizona...		3800
Wyoming	Cheyenne	2100
	Casper	1300
	Sheridan	900
Total for Wyoming...		4300

## Grand Totals

Next, you will produce a grand total of the number of pencils sold in all the states. This requires an additional field and a closing section. Follow these steps:

1. With the ReportWriter Editor on the screen, put the cursor in row 8, column 12 and enter the text "Grand Total".
2. Put the cursor in row 8, column 29 and issue six Control-F keystrokes to enter a new field. Name the new field "GrandTotal" with a source of "Calculation". Enter @SUM(Amount) as the formula. This is a Numeric field in Fixed format with zero decimal places.

You might reasonably expect to compute the grand total as @SUM(Total), but that formula does not work because Total accumulates for each record even though it only prints when the state changes. If you define the grand total as @SUM(Total), the grand total will contain the accumulated running totals of Total. That is, the grand total would include 1000 plus 1000 + 1600 plus 1000 + 1600 + 1200, and would add that to 2100 plus 2100 + 1300 plus 2100 + 1300 + 900, for a grand total of 17,200.

Clearly, that is not correct. You should always use the @SUM function on the data in each record, not on the result of another range function.



# ReportWriter Tutorial...

- Put the cursor in row 9, column 29 and enter a string of six equals signs to underline the grand total.
- Issue an Apple-O to go to the Options Menu, choose #2, "Section positions", and set line 9 as the bottom of the Closing section. The Editor screen should now look like the example in *Figure 4*.
- Enter an Apple-G to generate a report that should look like this:

State	City	Amount
-----	----	-----
Arizona	Phoenix	1000
	Flagstaff	1600
	Yuma	1200
	-----	-----
	Total for Arizona	3800
Wyoming	Cheyenne	2100
	Casper	1300
	Sheridan	900
	-----	-----
	Total for Wyoming	4300
	Grand Total	8100
		=====

## Multiple Groups

Your report now produces summary data for each state. Now you will develop a report that produces summary data for each city. The output will look like the example in *Figure 5*.

- Start by creating a new AppleWorks data base file called PencilSales.2 with the categories "State", "City", "Location", and "Amount". Enter the following data:

State	City	Location	Amount
-----	----	-----	-----
Arizona	Phoenix	4th and Main	400
Arizona	Phoenix	120 South St	600
Arizona	Flagstaff	Desert Plaza	800
Arizona	Flagstaff	Marriott Hotel	500
Arizona	Flagstaff	Galleria	300
Arizona	Yuma	The Trading Post	1200
Wyoming	Cheyenne	Uptown Mall	800
Wyoming	Cheyenne	Downtown Mall	800
Wyoming	Cheyenne	Midtown Mall	500
Wyoming	Casper	Yellowstone Gift Shop	700
Wyoming	Casper	Mountain Discount	600
Wyoming	Sheridan	The Emporium	900

- Launch ReportWriter and create a new report

**Figure 5: Sample Output from SalesReport3**

State	City	Location	Amount
-----	----	-----	-----
Arizona	Phoenix	4th and Main	400
		120 South St	600
		Phoenix total....	1000
	Flagstaff	Desert Plaza	800
		Marriott Hotel	500
		Galleria	300
		Flagstaff total....	1600
	Yuma	The Trading Post	1200
		Yuma total....	1200
		Arizona total....	3800
		=====	=====
Wyoming	Cheyenne	Uptown Mall	800
		Downtown Mall	800
		Midtown Mall	500
		Cheyenne total....	2100
	Casper	Yellowstone Gift Shop	700
		Mountain Discount	600
		Casper total....	1300
	Sheridan	The Emporium	900
		Sheridan total....	900
		Wyoming total....	4300
			=====

called SalesReport3 that uses the layout in *Figure 6*. Data for the ReportWriter fields appears in *Figure 7*. Use PencilSales.2 as the Master File. Accept the defaults for any ReportWriter field definitions that do not appear in the table. Be careful when you enter the Print definitions; a mistake here can cause some odd-looking reports.

"Text L" means Text, Left justified. "Text R" means Text, right justified. "Num F0" means Numeric, Fixed, 0 decimal places.

- Enter an Apple-O and define the Heading, Body, and Subtotal sections as indicated in *Figure 6*.
- Enter an Apple-G to generate the report.

**Figure 6: Format for SalesReport3**

```

File: SalesReport3          EDITOR          Escape: Main Menu
-----
State      City      Amount
-----
***** (1)  ***** (2)  ***** (3)  ***** (4)
***** (5)
***** (6)
***** (7)
***** (8)
***** (9)
***** (10)
***** (11)
-----
Type entry or use ⌘-commands      Row: 1  Col: 1      ⌘-? for Help
  
```

**Figure 7: Field Definition Table**

Fld Num	Fld Name	Source	Category or Formula	Type	Print
1	State	Master	State	Text L	When State changes
2	City	Master	City	Text L	When City changes
3	Location	Master	Location	Text L	Always
4	Amount	Master	Amount	Num FØ	Always
5	DashCity	Calc	"-----"	Text L	When City changes
6	TotalCity	Calc	@SUM(Amount)	Num FØ	When City changes
7	SpaceCity	Calc	" "	Text L	When City changes
8	DashState	Calc	"-----"	Text L	When State changes
9	TotalState	Calc	@SUM(Amount)	Num FØ	When State changes
10	DoubleDash	Calc	"=====	Text L	When State changes
11	SpaceState	Calc	" "	Text L	When State changes
12	LabelCity	Calc	See Note 1	Text R	When City changes
13	LabelState	Calc	See Note 2	Text R	When State changes

Note 1: @CONCAT(City, " total....")  
 Note 2: @CONCAT(State, " total....")

## Conclusion

As you can see, ReportWriter's flexibility lets you create almost any report from AppleWorks. I suggest that you experiment with other formats. Also move the subtotal groups to different locations in the report. It is apparent that the best way to learn ReportWriter is by creating and experimenting with your own reports.

Next month I will describe how to use ReportWriter to incorporate data from the report into other data base or spreadsheet files.

*[Dan Verkade is the developer of TimeOut ReportWriter, DoubleData, and other popular AppleWorks enhancements.]*

## Will Your IIC Accept Current Peripherals?

by Chris Adams

Over the years, Apple Computer made a number of running changes in the internal design and operation of the Apple IIC computer. Unfortunately, early model IIC computers will not accommodate many of the peripherals currently available for that computer, including peripherals designed and manufactured by Apple itself. For example, early model IIC systems are not compatible with Apple 3.5-inch disk drives or Chinook Technology's new Apple IIC hard drive.

Here is a simple procedure that lets Apple IIC owners determine if their computers will work with these peripherals:

1. Boot the computer without a disk in the drive.
2. When the "Check Disk Drive" message appears on the screen, enter a Control-Reset; the BASIC prompt (>) will appear.
3. Type the following:  
 ? PEEK (64447)  
 and press the Return Key.

The computer will display a one digit number under the line you typed. The number "3" indicates you have a late-model system that can run all the currently available peripherals. Tell the dealer if you get numbers other than "3"; your system might not support the peripheral of your dreams.

*[Chris Adams is President of Chinook Technology, a manufacturer of hard disk drives, memory cards, and other Apple II peripheral devices.]*

# New Disks in NAUG's Public Domain Library

---

### **ALUG – 6 Disk**

The Apple Library Users Group (ALUG) publishes a large quarterly newsletter, sponsors an annual conference, and maintains a library of public domain disks of interest to librarians. (For more information about ALUG, contact Monica Ertel, ALUG, Apple Computer, 10381 Brandley Drive, M/S 8C, Cupertino, California 95014.)

ALUG recently updated its sixth disk of AppleWorks files and templates. The revised ALUG-6 Disk includes 18 data base templates, 13 spreadsheet templates, and eight word processor files that handle book orders and acquisitions, library budgets, inventories, circulation statistics, requests for sample copies and/or information, overdue books, and periodical holdings. Other files produce disk labels and help you determine the ideal projector screen size for different size groups.

The NAUG Public Domain Library now includes the updated ALUG-6 Disk and all five other ALUG AppleWorks disks. See NAUG's Public Domain Library Catalog for a description of the other disks in this series.

### **Change-A-File/Resurrection**

Dr. Harold Portnoy continues to enhance Change-A-File and Resurrection, two utility programs for AppleWorks. Change-A-File converts AppleWorks 3.0 files to run under earlier versions of AppleWorks and recovers damaged files. Resurrection recovers files on disks with damaged directories. Complete descriptions of Change-A-File and Resurrection appear on page 32 of the September 1990 issue of the *AppleWorks Forum*.

NAUG updates its master Change-A-File/Resurrection Disk each time Dr. Portnoy releases a new version. At press time the group was shipping Change-A-File 3.05 and Resurrection 2.6.

### **Mitchell Bernstein Disks**

The NAUG Public Domain Library now includes the following two new disks of interest to mathematics educators:

**Circles:** This disk contains 12 geometry worksheets about circles. You load the files onto the AppleWorks desktop and print with SuperFonts. The disk includes all the necessary fonts and pictures. Mathematics teachers will find the worksheets useful; SuperFonts owners will enjoy looking at how Mr. Bernstein uses TimeOut Paint and SuperFonts to create the output. Requires TimeOut SuperFonts and AppleWorks 3.0.

**Geometry 3 and Graphs:** This disk includes special geometry and graph fonts created by Mr. Bernstein and a font downloader that loads each font into the memory in your ImageWriter. The files on the disk use these fonts to produce 20 different geometry worksheets, half of which involve proofs.

The Graphs component of the disk uses a special font to produce 24 different size X/Y graphs you can incorporate in word processor files. A sample worksheet on the disk shows how to include these graphs in a document. The disk also includes a file that produces twelve X/Y graphs on a single 8.5 x 11 inch page.

The Geometry 3 and Graphs disk requires an ImageWriter printer connected to an Apple IIc, IIc Plus, or IIGS computer, or to a Super Serial Card on an Apple IIe. This disk is shareware; the author requests a \$5 donation to help him pay the licensing fee for the font downloading program on the disk.

For a free copy of sample printouts from these disks, send a self-addressed, stamped envelope to Circles/Graphs, NAUG, Box 87453, Canton, Michigan 48187.

# Public Domain Update...

## ParishWorks

The NAUG Public Domain Library now includes ParishWorks, a collection of more than 75 word processor, data base, and spreadsheet templates that can help you manage a church or temple. This comprehensive set of templates include files that help with accounting, budgeting, attendance, contributions, goal setting and evaluation, leader and teacher development, music stewardship commitments, and worship. The package includes complete documentation in a 25-page AppleWorks word processor document on the disk.

Our thanks to Sheryl and John Washburn, founders of Software Sharing Ministries, for contributing these disks to the NAUG Public Domain Library. ParishWorks is shareware; you send the authors \$25 if you use the templates on these disks.

This is an extensive collection of files that fills two 3.5-inch disks or three 5.25-inch disks. Either set of disks costs \$12 plus \$2 s/h.

## Prevent

Prevent is a BASIC program that installs two patches in AppleWorks 3.0. The patches (a) force students to save their work on a designated disk or in a specific subdirectory, and (b) disable all access to AppleWorks' Other Activities Menu. That keeps students from changing any of the permanent AppleWorks settings, deleting files, creating subdirectories, or formatting disks. More information about these patches appears in the Advanced Techniques article entitled "Patches that Limit Student Access" elsewhere in this issue of the *AppleWorks Forum*.

NAUG supplies Prevent on an easy-to-use, bootable disk. To use the program, you boot your computer with the disk and tell Prevent where to find your copy of AppleWorks.

Our thanks to John Link, author of SuperPatch, SuperPatchNet, and LockOut, for developing and contributing these copyrighted programs to NAUG's library.

## UltraMacros IIc Patch Disk

The NAUG Public Domain Library now includes the UltraMacros IIc Patch Disk. This bootable disk

patches TimeOut UltraMacros and lets all Apple IIc owners use their mouse with AppleWorks. Complete information about this patch appears in the article entitled "Mouse Patch for the Apple IIc" on page 21 of this issue of the *AppleWorks Forum*.

Our thanks to NAUG members Randy Brandt and Mark Munz for donating this disk to the NAUG library.

## How to Get Disks

Unless otherwise noted, all disks are available in both 5.25-inch (\$4) and 3.5-inch (\$6) format, plus \$2 *per order* for shipping and handling. Order from NAUG, Box 87453, Canton, Michigan 48187. All NAUG disks are also available for downloading from NAUG's electronic bulletin board, the Electronic Forum, and from the NAUG areas on CompuServe, America Online, and GENie. Shareware payments go directly to the author, not to NAUG.

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# Mail Order Dealers That Support the Apple II

by Nanette Luoma

It is increasingly difficult for Apple II users to locate dealers who specialize in supplying hardware and software for Apple II computers. The *Apple II Guide* (available from NAUG; \$4 plus \$2.50 s/h) contains a 36-page list of Apple dealers who support the Apple II market. This article supplements that list by presenting information about mail order dealers who specialize in Apple II equipment and software. Please tell NAUG about your favorite mail order dealer that we omitted from this list.

## **A2 Central**

*Hardware and Software*  
Box 11250  
Overland Park, Kansas 66207  
Orders: 913-469-6502

## **ActaSoft**

*Software Developer*  
19700 Wells Drive  
Woodland Hills, California 91364  
Orders: 818-996-6731

## **Alltech Electronics, Inc.**

*Discount Hardware*  
602 Garrison St.  
Oceanside, California 92054  
Orders: 619-721-7733  
Fax Phone: 619-721-2823

## **American Printing House for the Blind**

*Hardware and Software*  
Box 6085  
Louisville, Kentucky 40206  
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## **Applied Engineering**

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## **Beaumont Software**

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5520 Hooks Ave  
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# General Interest...

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## **H & K Technologies**

*Software Developer*  
Box 742  
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